

## **DRAWINGS**

Please replace both drawing sheets on file with the enclosed replacement drawing sheets. The replacement drawing sheet 1 of 2 contains amended Fig. 1, and the replacement drawing sheet 2 of 2 contains Fig. 2 in unamended form and amended Fig. 3. A marked-up copy of the amended figures is also enclosed.

## **REMARKS**

At the time the Office Action issued, claims 1 to 7 and claim 9 were pending. Claims 1 to 7 currently stand rejected. Claim 9 has been allowed, and Examiner is respectfully thanked for having allowed this claim. Claims 2-4 and 6 have been identified as containing allowable subject matter. However, in view of the arguments presented below regarding the patentability of claim 1, Applicant prefers not to rewrite the claims in independent form at present.

### **Drawing**

The Office Action objects to the drawings as failing to comply with 37 CFR 1.84(p)(4) because reference character "10" has been used to designate both casing (Fig. 1) and mud.

Attorney respectfully submits that reference character "10" only appeared once in the drawings. Hence, it is suggested that the objection made in the Office Action is essentially an objection against the specification which indeed uses in [0029] the reference character "10" to designate both casing and drilling mud.

To overcome any ground of objection, Attorney for Applicant herewith respectfully submits a replacement sheet containing amended Fig. 1 wherein a new reference sign "25" has been used to indicate the upwardly flowing drilling mud as specified in lines 9-11 of [0029].

It is respectfully submitted that the inclusion of the reference signs do not constitute addition of matter, because the lines 9-11 of [0029] in the specification leave no doubt that the drilling mud is flowing upwards into the annulus between the well bore wall and the drill string 7, corresponding to the arrow that originally appears in Fig. 1.

The Office Action also objects to the drawings as failing to comply with 37 CFR 1.84(p)(5), because they are found not to include reference sign "30" mentioned in [0032] of the specification.

This objection has been overcome by amendment of Fig. 3 to include reference sign "30" in the same way as reference sign "17" in Fig. 2. No matter has been added.

### **Specification**

Although no formal objection to the specification has been made, Attorney for Applicant has amended paragraph [0029] to bring the description into conformity with the amended Fig. 1. Specifically, the reference character "10" has been changed to "25" where it was mentioned in connection with the drilling mud. No new matter has been added.

### **Claim amendments**

The term “choking means” in the last line of Claim 1 and Claim 9 has been amended to “choke means” in order to conform to the antecedent basis provided earlier in these claims.

New claims 10 to 12 have been added, all ultimately dependent on allowed claim 9. No matter has been added. Claim 10 is based on original claim 2, but phrased in an active voice. Claim 11 is based on original claim 3, phrased in an active voice. Claim 12 is based on disclosure in the specification, last sentence of paragraph [0032] (page 5 of the originally filed specification, lines 24-27).

Claim rejections under 35 USC §102(b)

Claims 1 and 7 have been rejected under 35 USC §102(b) as being anticipated by Burnham *et al* (US 3,365,009).

The Action states that Burnham *et al* disclose a drilling system comprising: drilling means 11; pumping means 74 during drilling; a drilling fluid outlet system 10, having unidirectional chokes 18,20 for the return flow of retrieved drilling fluid; and alternating means 30,38 for alternating the flow direction through the choking means. The Examiner explains in parenthesis: “when valve 30 is closed and valve 38 open, flow will “alternate” and fluid will flow through coupler 32 and pipe 40 into pipe 36.

Attorney for Applicant respectfully traverses these rejections.

It is respectfully submitted that the Examiner’s explanation is incomplete, in that the claim requires alternating the flow direction through the choke means, not just alternating the flow direction. The Examiner has identified Burnham *et al*’s bladder valves 18,20 as the choking means. It appears that the Examiner is arguing that flow through pipe 40 is “alternating” the flow direction. However, it is not alternating the flow direction through the chokes 18,20.

Referring to the drawing in Burnham *et al*, when valve 30 is closed and valve 38 is open, the pressurized drilling fluid leaving the well through casing 12 will pass fitting 16 and check valve 43 from left to right. (Col. 3 lines 39-41). The drilling fluid will then flow generally from left to right until it reaches the low pressure end at delivery pipe 60. Depending on which of the valves 30 and 38 are open and closed, the drilling fluid can either flow (from left to right) through each one of the bladder valves 18, 20, 22, 24, 26 (serially one after the other) (see Col. 3 lines 45-47) or bypass around any particular one of these via bypass pipe 34 and the appropriate connecting pipes 36 (Col. 3 lines 61-65).

In order alternate the flow direction through any particular one of the bladder valves 18,20, the pressure on the right hand side of the particular bladder valve must exceed the pressure on the left hand side of the particular bladder valve.

There is no way that by operating the valves 30 and 38, the left side of any one of the unidirectional bladder valves can be connected to any low pressure while the right hand side is connected to the well.

E.g., if we want to establish reverse flow through particular bladder valve 20, then the connector 32 on the left hand side of that valve must be connected to a low pressure. Other than delivery pipe 60 there is no low pressure available in the pipe system. Connecting with the delivery pipe 60 can be established by closing valve 30 to the left of the junction, valve 38 that is in line 34 below bladder valve 18 and opening all other valves 38 in line 34 and valve 38 in the second connecting line from the left in order to establish a connection with low pressure end 60. But then, there is no means available to connect the right hand side of the particular bladder valve 20. Hence, with the means available in Burnham *et al* it is not possible to alternate the flow direction through any of the bladder valves.

Burnham '009 does discuss a situation wherein a reverse flow condition can occur very briefly in the event of a sudden pressure reduction in the well (see the paragraph bridging columns 3 and 4). However, it is respectfully submitted that the fact that a sudden pressure reduction in the well may occur is not teaching or disclosing "alternating means for alternating the flow direction through the choke means".

In fact, Burnham '009 even teaches away from allowing reverse flow through the bladder valves 18, 20, etc, because return flow pipes 40 with one-way check valves are provided in parallel with each of the bladder valves 18, 20 etc to permit drilling fluid to flow back around the bladder valves (see Col. 3 lines 66-68). In addition, a check valve 43 is interposed between bladder valve 18 and fitting 16 which isolates the bladder valves from the well upon the occurrence of reverse flow condition, thus permitting the pressure across all of the bladder valves to equalize very quickly. (Col. 3 line 71 to Col. 4 line 2).

In conclusion, the Examiner's assertion that Burnham '009 discloses "alternating means 30,38 for alternating the flow direction through the choking means" is incorrect and not supported by the art.

Accordingly, reconsideration, and ultimately withdrawal of these rejections, is thus respectfully requested.

#### Claim rejections under 35 USC §103(a)

Claims 5 has been rejected under 35 USC §103(a) as being unpatentable over Burnham *et al* in view of Gipson *et al* (US 6,119,779).

It is stated in the Office Action that Burnham *et al* disclose the invention substantially as claimed but not an accumulator. It is then stated that Gipson *et al* present a drilling fluid outlet system 10 with an accumulator 18. It would, according to the Examiner, have been obvious to a person having ordinary skill in the art at the time the invention was made to

include an accumulator in the Burnham *et al* system as presented by Gipson *et al*, in order to collect sand (Gipson *et al* Col. 2 lines 12-13).

Attorney for Applicant respectfully traverses this rejection.

It has been demonstrated above that Burnham '009 does not disclose the invention as claimed because Burnham '009 does not disclose or teach "alternating means for alternating the flow direction through the choke means".

Gipson '779 does not remedy this failure of Burnham '009 to disclose or teach "alternating means for alternating the flow direction through the choke means".

MPEP 2143.03 states that "[t]o establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art".

Thus, for failure to disclose or teach each claimed element, no *prima facie* case of obviousness has been established and therefore the Applicant is under no obligation to submit evidence of non-obviousness.

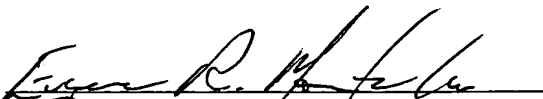
Applicant does not agree with Examiner's interpretation of Gipson *et al* nor with the motivation to combine, but these issues have become moot by the above.

Reconsideration is respectfully requested.

Concluding remarks

Attorney has addressed each and every ground for objection and rejection raised by the Examiner in the Office Action. Attorney respectfully submits that the specification and claims, both new and as amended, are now in a state ready for allowance. In the event the Examiner has any questions or issues regarding the present application, the Examiner is invited to call the undersigned prior to the issuance of any written action.

Respectfully submitted,  
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Fig.2.

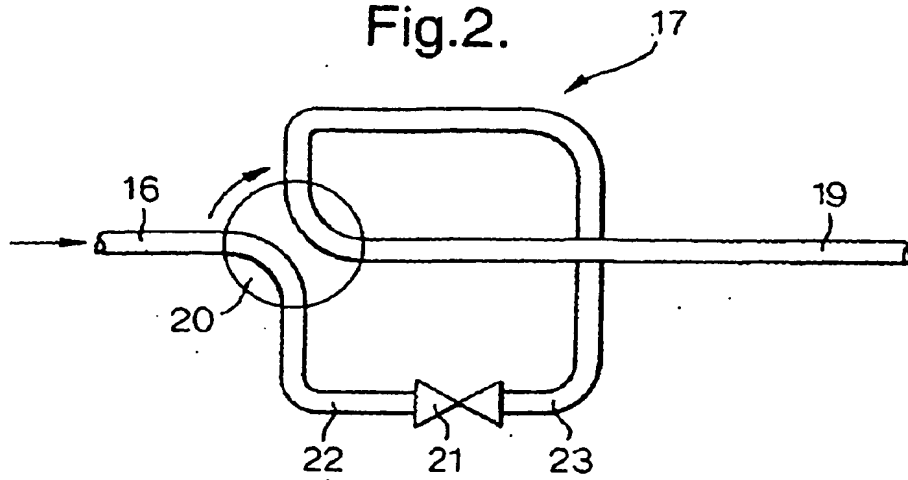


Fig.3.

